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HIGHER EDUCATION

SEMIMONTHLY PUBLICATION OF THE FEDERAL SECURITY AGENCY
Office of Education, Higher Education Division

VOL. VIII, NO. 4 WASHINGTON, D. C. OCTOBER 15, 1951

Professional Education in Forestry

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IN its broadest sense, forestry is the art, science, and business of managing woodland for the continuous production of forest goods and services. A competent forester is qualified to manage a forest property whether of a half acre or a half-million acres, and whether the primary object of management is wood, wildlife, forage, water, or scenery. In short, he is a general practitioner, educated and trained in the protection, administration, harvesting, reproduction, and utilization of the forest resource and its products.

The training of a forester is grounded in a combination of biological, economic, engineering, and social sciences.

Professional education in forestry in the United States is offered by 34 colleges and universities. Twenty-five of these are accredited by the Council of the Society of American Foresters. Nine institutions have not yet met the standards of accrediting.

Historical Development

During the last quarter of the nineteenth century, lectures on forestry and tree culture were given in at least 22 land-grant colleges and several universities, mostly by members of the faculties of botany and horticulture. These lectures, usually offered to students of agriculture, stressed tree planting, farm woodlot management, and the influence of forests on climate and stream flow. There was a growing interest in forestry education, but no body of courses was offered which might prepare workers for a career.

The foundation for professional training was in the making, however. Two institutions began offering instruction in 1898: the New York State College of Forestry at Cornell University and the Biltmore Forest School in North Carolina. Both schools were subsequently discontinued. But in 1900 Yale University and the University of Minnesota set up full forestry curriculums. These two universities now enjoy the distinction of being the two oldest forestry educational institutions in continuous operation in the Western Hemisphere.

Although technical training in forestry had been offered by certain European institutions of higher learning for more than a hundred years prior to the establishment of the first American school, and although the first schools on this continent were headed by German foresters, professional forestry education in America was characterized by a fresh and independent outlook from the start. For one thing, the basic aim of the United States schools was to train men for the practice of forestry as a profession—a profession just coming into existence.

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For another, these schools were different from their European prototypes because their essential purpose was to bring about the management and conservative use of our American forests.

By the period of the first World War, 20 schools of forestry were in operation. Most of these were land-grant institutions and offered a 4-year undergraduate degree. Yale had the only wholly graduate school. By 1929, when the "forest education inquiry" (discussed under Accreditation) was launched, there were 25 schools of collegiate grade offering professional instruction in forestry.

Professional Curriculums and Degrees

Although education in forestry varies slightly from institution to institution, the professional curriculum in each of the accredited schools has a solid foundation of five essential courses. These courses are (1) silviculture, based on plant ecology, botany, plant physiology, dendrology, and soils; (2) forest protection from fire, insects, and disease; (3) forest management, based on mensuration, surveying, and mathematics through trigonometry; (4) forest economics; and (5) forest utilization. The degree offered on completion of the 4-year undergraduate curriculum is bachelor of science in forestry.

Since thorough coverage of the necessary foundation subjects and these professional subjects is practically impossible in the usual 4 years, all the accredited schools now offer an additional year, leading to the master's degree, in which the student's training can be broadened and intensified. In fact, Yale and Duke operate wholly on the graduate basis, and, in addition to the doctor of philosophy, offer the comparatively new degree of doctor of forestry. The master's degree is increasingly recognized as essential for full professional training, and the doctor's degree for research and teaching.

Since the first degree in forestry was awarded in 1900 (in that year there was only one), the forestry schools of the United States have granted approximately 19,400 undergraduate and 3,600 master's degrees. The number of doctor's degrees awarded during the past half century is not known; the annual average for the past 3 years has been 100.

Accreditation

During the 1920's several prominent forestry educators proposed that a study be made of "the education of men preparing for the profession of forestry." This study was made possible by a grant of $30,000 to the Society of American Foresters from the Carnegie Corporation of New York. In 1929 Henry S. Graves of Yale and Cedric H. Guise of Cornell were put in charge of the Society's "forest education inquiry." During the following 2 years an exhaustive investigation was carried on, resulting in the book *Forest Education* by Graves and Guise, published in 1932 by the Yale University Press.

Using this study as a foundation, the Council of the Society next authorized an examination of each of the schools of forestry to determine the minimum standards of training essential to qualify graduates for membership in the Society in the junior professional grade. This survey, begun in 1933 by a Committee on Accrediting under the chairmanship of H. H. Chapman of Yale, resulted in the establishment of a list of 14 approved schools of forestry. Six additional schools were listed as eligible for approval provided certain standards were met. Thus, the principle of accrediting was first applied to forestry education in America.

The Committee on Accrediting has continued as a permanent standing committee of the Society of American Foresters and has accredited additional institutions. Its present chairman is Prof. Myron Krueger of the University of California School of Forestry. The most recent examination of all the schools of forestry was undertaken during 1950.

The 25 accredited colleges and universities provide professional training of a standard to warrant the admission of graduates in approved curriculums to membership in the Society without further proof of competence. By "approved curriculums" is meant a body of instruction containing the five basic courses previously mentioned—silviculture, forest management, forest protection, forest economics, and forest utilization.

Certain schools of forestry specialize in adjunctive curriculums, such as forest engineering, range management, wildlife management, forest recreation, wood technology, and wood utilization. Since, in some institutions, these specialized curriculums do not include the essential five-course core of forestry previously mentioned, the Council of the Society, in its accrediting procedure, examines and approves individual curriculums as well as accredits the institution itself.

It is not the intention of the Society of American Foresters that the system of accrediting shall be a strait-jacket confining forestry education. Accrediting of forestry curriculums grows out of the So-

ciety's sense of responsibility to assure the American public that graduates in forestry shall be adequately trained for the practice of forestry. As a concrete manifestation of its interest in accrediting as a public service, the Society of American Foresters has assumed, and will continue to assume, the full burden of the costs of accrediting.

Enrollment

Annually, the *Journal of Forestry*, which is the official organ of the Society of American Foresters, publishes statistics from all the schools of forestry. Included in the information is the number of students enrolled.

The first records showed 19 undergraduates in 1903–04. The number gradually increased to 904 during 1914–15, then declined during the first World War. Following the war, enrollments gradually rose until 1929–30, when there were 2,123 undergraduates registered.

With the establishment of the Civilian Conservation Corps in 1933 and other Federal conservation activities of that period, the demand for foresters resulted in a marked rise in enrollment, to a high point of 6,067 in 1937–38.

Enrollments then gradually fell off until, during World War II, the schools of forestry were almost depleted of students. The low point was reached during the academic year 1943–44 when only 503 were enrolled.

Again following World War II, enrollments increased. In 1945–46 there were 1,473 undergraduates; the next year there were 7,010; and during the school year 1948–49 enrollment reached an all-time high of 8,212. Since 1945 seven additional schools of forestry have been established.

Statistics on the enrollment for the school year 1951–52 have not yet been compiled, but it is believed that the numbers will be about the same as for 1950–51, which were as follows: freshmen, 1,442; sophomores, 1,379; juniors, 1,384; seniors, 1,730; total undergraduates, 5,935. For the same period, graduate enrollment for the master's degree was 483; and for the doctor's degree, 118.

In 1951 there were 1,700 bachelor degrees awarded, 480 master's degrees, and 118 doctor's degrees.

Supply of Foresters

Twenty-five years ago the Federal Government, notably the Forest Service in the United States Department of Agriculture, was the largest employer of foresters. During the past decade, and especially since the end of World War II, a great expansion in industrial forest practice has occurred. In consequence, most of the current forestry graduates are going into private work.

In general, the annual output of forestry graduates is sufficient to fill the current demand, and the existing schools are adequate to meet the employment needs of the foreseeable future.

With respect to the need for new schools of forestry, the Council of the Society has adopted the following statement of policy:

"In view of the adequacy of existing schools of forestry in the United States to supply the healthy demand for professional foresters, the Council of the Society of American Foresters recommends against the establishment of new schools or departments for professional training in forestry.

"The Society welcomes the introduction of nonprofessional courses in forestry in colleges and universities as a matter of general education and as a part of the training of students in agriculture.

"Forestry graduates of institutions which do not meet the standards of professional training set by the Society of American Foresters are not accepted by the profession as members of the Society on the same basis as are the graduates of approved schools, and may be handicapped in securing professional recognition as, in the case of other professions, the value of such standards becomes more widely understood by the public."

This policy was not adopted with the intention of trying arbitrarily to limit either the number of schools or the number of foresters. It was adopted because of the postwar tendency of certain colleges, including teachers' colleges, to offer instruction in forestry on the professional level, with faculties inadequately staffed, inadequately financed, and with inadequate facilities.

Research

Research has been an adjunct of education almost from the establishment of the first schools of forestry. Studies in the production and management, as well as in the utilization, of forest crops have been an integral part of the program.

Most of the accredited schools of forestry now have staff members devoting full time to research. In some institutions 25 percent of the budget goes for this purpose. Among the institutions that devote sizable budgets to forest and wood-use research are the

College of Forestry of the State University of New York (Syracuse); Duke and Yale Universities; the Universities of California, Michigan, Minnesota, and Washington; and Oregon State College.

Until comparatively recent years private timberland owners and operators of wood-using industries were not generally research-minded. Increasingly, however, they have needed to find the answers to pressing problems of forest management and wood utilization. Accordingly, rather extensive programs of research, sponsored and financed by forest products industries, are being conducted at some educational institutions.

In addition to research in silviculture and forest management, numerous studies in related fields are now under way. Noteworthy are the studies in range management, wildlife management, forest ecology, forest entomology and pathology, forest influences, and wood technology. In the past much of this kind of research was empirical in character, aimed at finding quick answers to immediate problems. In late years the educational institutions have emphasized basic research as the indispensable foundation for improving technical practice.

Subprofessional Education

In addition to the professional schools of forestry there are several institutions that offer courses of collegiate caliber but not leading to a degree. These courses are frequently given in connection with agricultural curriculums, mainly for the benefit of future farmers who will manage their own woodland or for those training for agricultural extension work or for teaching.

A few institutions, called ranger schools, offer a type of training designed to prepare men for subordinate positions in forestry. Usually of 1 year or 2 years in duration, these courses include technical subjects but are largely vocational.

A list of all institutions of college grade offering forestry instruction, whether professional or subprofessional, may be obtained without charge from the Society of American Foresters, Mills Building, Washington 6, D. C.

Problems in Forestry Education

A major problem in forestry education, as it is doubtless a major problem in professional schools generally, is how to strengthen the weak institutions. If forestry is to continue to progress, the weaker schools, represented by the institutions which have been unable to meet the standards of accreditation, must be given whatever assistance may be appropriate and within the power of the profession to render. The Society of American Foresters is working on this perplexing problem.

A second problem, which parallels the first, arises when an institution, such as a land-grant college or a teachers college, decides to offer a professional curriculum on a wholly inadequate basis. It is astonishing how often well-meaning but uninformed people will bring influence to bear on State legislatures or college administrations to establish a professional curriculum with but little conception of what is involved in cost, manpower, and facilities. There are even college officials who apparently assume that all that is necessary to start a forestry school is an edict; they forget the cash.

As is mentioned in the section of this article dealing with Supply of Foresters, the Council of the Society of American Foresters has recommended against the establishment of new schools or departments for professional training in forestry. This policy does not mean that the Society will withhold cooperation or assistance from any institution that starts a new school. On the contrary, the Society will bend every effort toward getting new schools on an accredited footing at birth.

One additional vexing problem which confronts forestry educators is the controversial matter of specialized or adjunctive courses at the undergraduate level. Nearly every school offers at least a few specialized courses. In expanding their offerings several schools have deleted certain forestry courses. Range management and wildlife management are rapidly assuming the attributes of distinct professions. A separate curriculum in forest products, though not truly professional, is recognized. Intensification in these fields will continue. If each field is to be well grounded in the basic sciences and if the curriculums are to include training in the humanities and the social sciences, then schooling beyond the 4-year period is probably inevitable.

Dealing as it does with nature, the outdoors, and living things, forestry is a dynamic profession. Forestry education has been a subject of continuous growth and study, with the practicing forester participating in the discussions along with the teacher. The gratifying increase in employment during the past decade presages equally satisfactory strides during the decade ahead. Of necessity there will be changes in the character of education. Hence

the schools' final and biggest problem is to prepare themselves to meet the expanding demands of technical practice, of broadening employment, and of pressures for still further specialization.

The Accredited Schools

The accredited institutions and their enrollments in 1950–51 were as follows:

Alabama Polytechnic Institute, Department of Forestry (113).
University of California, School of Forestry (253).
Colorado A & M College, School of Forestry and Range Management (191).
Duke University, School of Forestry (graduate only) (76).
University of Florida, School of Forestry (195).
University of Georgia, School of Forestry (174).
University of Idaho, School of Forestry (235).
Iowa State College, Department of Forestry (243).
Louisiana State University, School of Forestry (129).
University of Maine, Department of Forestry (240).
University of Massachusetts, Department of Forestry and Wildlife Management (41).
Michigan State College, Division of Conservation (358).
University of Michigan, School of Natural Resources (315).
University of Minnesota, School of Forestry (298).
University of Missouri, Department of Forestry (118).
Montana State University, School of Forestry (253).
State University of New York, College of Forestry (796).
North Carolina State College, School of Forestry (207).
Oregon State College, School of Forestry (318).
Pennsylvania State College, Department of Forestry (374).
Purdue University, Department of Forestry (205).
Utah State Agricultural College, School of Forest, Range, and Wildlife Management (249).
University of Washington, College of Forestry (264).
West Virginia University, Division of Forestry (178).
Yale University, School of Forestry (graduate only) (52).

General Education Board Report

THE GENERAL EDUCATION BOARD has recently issued its annual report for the year 1950. Although the scope of the board's activities has been reduced in late years, the organization still makes a sizable contribution to education. The following information is from the report.

The appropriations of the board for 1950 came to $4,055,109. Of this amount $2,539,859 was taken from income and $1,515,250 was from capital.

Income for the year was $1,984,383, of which $484,383 represented a return on investments and $1,500,000 was a contribution from the Rockefeller Foundation for the support of the board's activities.

The board's assets on December 31, 1950, were $24,624,493. Against these assets were various accounts payable amounting to $7,351,709. The $10 million of capital formerly set aside to provide income for administrative expenses was, by vote of the trustees, released for expenditure. The board at the close of the year 1950 had $12,075,657 of principal which could be appropriated. Other unallocated funds amounted to $5,197,127.

During the year 1950 the board made grants aggregating $3,403,229 for 15 institutions and agencies: 4, totaling $1,855,000, for graduate centers; 6, amounting to $1,258,229, for institutions for Negroes; 2, totaling $65,000, for institutions in needy areas; and 3, amounting to $225,000, for special projects of benefit to the South. In addition, the board made 8 grants in aid, 18 assisting grants for special summer programs, and 96 fellowship and scholarship awards for graduate study. These smaller grants aggregated $256,999.

The General Education Board was established in 1902 by John D. Rockefeller, Sr., for the "promotion of education within the United States of America without distinction of race, sex, or creed." Originally and for many years the board operated on a national basis, primarily to promote higher education. Since 1940 it has interested itself mainly in the further improvement of education in the 15 Southern States. This was an original interest of the board.

The board is now devoting its attention primarily to efforts for improving the quality of higher education in the South. The achievement of this end is being sought mainly in four ways: (1) The development of a few strong centers of graduate instruction favorably situated to meet the needs of the South; (2) the improvement of undergraduate instruction in key colleges for Negroes; (3) the acceleration of the educational advance in several States where resources for educational purposes are limited; and (4) the training of personnel for instruction, research, and administration in educational institutions and agencies throughout the region. For the fourth purpose the board awards annually a number of scholarships and fellowships for graduate study.

Total appropriations from 1902, when the board was founded, to the close of 1950, were: (1) From principal, $164,427,148; (2) from income, $132,339,913; (3) total, $296,767,061. Of this sum $128,555,291 (43 percent) was expended in the South. About 40 percent ($51,275,158) of the expenditures in the South was for the education of Negroes.

A Workshop Survey

A GRADUATE SUMMER WORKSHOP at Lewis and Clark College, Portland, Oreg., employs the survey of community desires and needs as a learning procedure. It accepts invitations from school boards in suburban districts to study various aspects of education in the community and report to the community in public forums and written interpretations. The third of these workshops was held during the past summer.

CONDUCT OF THE WORKSHOP

The third workshop made a 6-week survey of attitudes toward school policies in Oregon City, a community with a population of 8,000. Preparation for the workshop was made by two meetings with the superintendent of schools and leading citizens of Oregon City, at which needed aspects of the study were suggested. Cooperating in these preparations were the City Planning Commission; the Chamber of Commerce; the Parent-Teacher Association; the churches; Rotary, Kiwanis, and Lions Clubs; and a general planning committee.

Accepted principles of random sampling were used by the members of the workshop who interviewed residents of the community. The findings, together with many other facts of significance for the formulation of school policies, were reported by the workshop at a public forum in Oregon City.

SOME FINDINGS

The findings dealt with several matters of public interest. For example, for each critic of the subjects taught in the schools 25 supported continuation of courses taught or increased offerings of similar kind. Even in the area of greatest protest—which proved to be foreign languages—every critic was matched by 8 who favored present practices or advocated more emphasis on foreign languages. Sex education in the high school was favored by a still higher ratio.

Less surprising than the weakness of actual opposition to modern educational methods was the emphasis of parents of school children on the need for more vocational guidance in the schools. The childless patrons indicated more concern for training in better use of English. All favored greater emphasis on citizenship training.

One discovery that may have significance for the future of public education was the large number of adults who wish to continue education. A potential adult group, including nearly half the total population interviewed, appear ready to join self-improvement clubs, or classes in art, music, gardening, and business. This interest appears to be largely cultural rather than vocational. Few were concerned to take training for vocations they might prefer to their present occupations, even if courses were available.

The weakness of the opposition to increased school taxes was equally surprising and encouraging. The sampling indicated that, of a population of 8,000, only 40 were strongly opposed to any tax increase; 200 believed that the present budget was adequate; while over 500 strongly favored a larger budget, with more than 1,100 ready to support increased taxes for certain expanded services.

PURPOSE OF THE WORKSHOP

The college hopes to make young educators more community conscious and to help them acquire techniques for making community surveys. In order to provide ideal motivation, members of the workshop were given freedom to determine the aspects of the community which they would study and the methods they would employ. This has tended to dramatize the fact that they are facing problems of their own, not carrying out assignments of a professor. Since the reports would be public and would probably have a bearing on their future promotions, members made diligent efforts to discover what areas were considered significant and what methods were approved by recognized educational leaders and survey experts.

Machine Tools Wanted

THE National Production Authority is making a drive to get available machine tools now on campuses back into productive work. It has asked that inquiries concerning this matter be directed to J. K. Woll, Used and Available Tools Section, National Production Authority, Location 3K14, New General Accounting Office Building, Washington 25, D. C. (Telephone—STerling 5200, Extension 4200).

The following is quoted from a statement issued by the Executive Secretary, National Association of Educational Buyers, to organization members:

> Let's get at this valuable opportunity to demonstrate again the good faith of higher education in its defense effort cooperation. It takes months of expensive labor and much critical material to build machine tools. You can advance defense production by leaps and bounds by reasonable and ethical selling to bona fide defense industry manufacturers. Mr. Woll told your executive secretary that he knows of one institution which possesses a group

of machine tools which would completely set up a small factory. He is assisting that institution in making arrangements to usefully dispose of these items acquired under a variety of Federal surplus disposal programs.

Meantime, The General Services Administration Order 101 liberates considerable unwanted surplus:

"Where Government personal property was acquired by an educational institution under Public Law 697 in accordance with a Finding of Need made by or on behalf of the United States Commissioner of Education, such property belongs to the educational institution and may be disposed of according to their existing procedures."

NAEB urges a reasonable and ethical attitude on pricing and selling. Federal Surplus disposal programs favored institutions for the "public benefit" to be derived by the educational "use" of acquired materials. Conversion of such materials to funds other than to recapture costs is unethical.

Don't sell to speculators! Until NPA issues its plans, seek advice and help from Mr. Woll. Your prompt action may increase our national security immeasurably.

Defense Information Bulletin

TWO new *Defense Information Bulletins* have been issued by Commissioner of Education McGrath. One relates to the shortage of scientifically and technically trained personnel and the other to educational construction as affected by shortages of critical materials.

Trained Personnel

Director of Defense Mobilization Charles E. Wilson has made the following statement:

This Nation is confronted with a serious shortage of scientifically and technically trained personnel. The supply of scientific and engineering graduates in 1951 is less than half that needed to fully man our economic and defense programs. Present indications are that the number of scientifically trained graduates will steadily decrease at least until 1954 while the demands of essential civilian and defense programs, in the same period, will continue to increase. We can and we must do something about this shortage.

First, Government, industry, and educational institutions must make the most effective possible utilization of those persons who have received scientific and technical training. Any failure to utilize such personnel in the most effective possible manner plays into the hands of those who want to see our defense mobilization program fail. All departments and agencies of the Federal Government must set the example in this respect.

Second, our educational institutions can develop counseling programs which will result in a larger number of men and women being trained in these fields. Students with aptitudes for such training can and should be shown that by obtaining scientific and technical training they can prepare themselves for satisfying employment and, at the same time, make a major contribution to the preservation of our way of life. If this demonstration is made, they will respond. More women, for example, should be enrolled in scientific courses and in engineering schools than is the case today. Their services are needed and will be utilized.

Third, industry and Government should develop both on the job training programs and cooperative training programs with institutions of higher learning and other educational institutions which will result in employed persons receiving scientific and technical training. Where persons now employed possess the aptitudes for such training, methods must be developed which will result in utilizing what will otherwise remain a hidden source of potential scientific and technical manpower. I appeal to our educational institutions and to administrators in Government and industry to take every available measure to help alleviate the shortage of scientific and technical personnel. This must be done if our defense program is to succeed.

Educational Construction

The increased demands of the defense program for critical metals—steel, copper, and aluminum—render it unlikely that needs for new school construction can be met in any substantial degree during the next few months. Under allotments made to the Federal Security Agency, Office of Education, by the Defense Production Administration, allocations of critical materials for educational construction for the fourth quarter of the current year have, with very few exceptions, permitted the granting of these critical materials only to those construction projects which are actually under way.

The school, college, and library construction program received an allotment of 94,300 tons of steel, 2,881,000 pounds of copper, and 11,250 pounds of aluminum for the fourth quarter of 1951. Subsequently, upon appeal by the Federal Security Agency, Office of Education, the DPA granted a supplemental allotment for the fourth quarter of 10,000 tons of steel and 1,200,000 pounds of copper.

Up to September 7 the Office of Education had received 3,260 applications for scarce materials which would be required during the fourth quarter of 1951 in the construction of school, college, and library buildings. It has been able to fill 1,624 applications; no steel has been available for 1,636.

It will continue to be the Office of Education policy to allocate steel, copper, and aluminum to going construction before making allocations for new construction, except in the most critical new con-

struction cases. The current situation will require a cutback, and in many cases, a deferment of plans for construction of educational facilities, and will probably necessitate reappraisal by architects of plans for new construction with the substitution of reinforced concrete for structural steel wherever feasible.

In order to allocate the reduced amount of steel to those pending applications which represent the most critical needs and to speed up service to applicants for construction permits, a Division of Civilian Education Requirements has been established in the Office of Education, under the direction of Deputy Commissioner Rall I. Grigsby.

Pre-Induction Scholarship Program Extended

THE preinduction scholarship program sponsored by the Fund for the Advancement of Education (see HIGHER EDUCATION, September 1, 1951) has been extended to more institutions and broadened in scope.

The project was originally proposed by four universities—Chicago, Columbia, Yale, and Wisconsin. It now includes three more universities—Fisk, Louisville, and Utah—and four colleges—Goucher, Lafayette, Oberlin, and Shimer. At Lafayette College the program is restricted to engineering students. It permits youth under the age of 16½ who have completed their sophomore year in high school to go directly to college.

As originally conceived, the program was to be restricted to men students primarily to allow those selected to receive 2 years of liberal arts training before induction into the Armed Forces. This preinduction feature has been somewhat subordinated to the broader purpose of examining the high school-college relationship and thus applications from women are being accepted at the institutions that have been added to the original four.

The administration of the program is being handled by the individual colleges through grants totaling $1,904,400 by the Fund. Selection of students is made on the basis of high-school grades, school recommendations, and scores in college board examinations. Irrespective of need, all students will receive tuition for 4 years. In addition, cash grants for maintenance will be provided, according to financial need. Special attention will be directed to the students' social and psychological adjustment as well as to their academic standing.

Personnel for Point IV Program

THE Office of Education is building up a roster of well-qualified candidates to assist in the educational program under point IV. Requests have come to us from various countries for specialists in vocational agriculture; rural, elementary, and adult education; industrial arts; science; educational methods and teacher training; engineering; education of the illiterate. These educators will be expected to train teachers who in turn will teach their own people. There is no language requirement. At present, recruitment is in progress for countries in Burma, Thailand, Indonesia, Iran, and Syria. In the near future, other countries in the Near East will, no doubt, request assistance under point IV.

Personnel for this program not only must be well qualified professionally, but must be capable of making sound and realistic appraisal of the particular needs of certain regions and communities, and must possess the resourcefulness and leadership to help people help themselves by using the resources at hand. Only handpicked educators who exemplify the democratic way of life and who have an innate respect for the customs and traditions of other countries can be sent. Candidates who are graduates of accredited colleges and have had at least 3 years successful teaching experience have the best chance for appointment.

Living conditions in under-developed areas, in most instances, are rather primitive, but there are other compensations, such as the opportunity to travel and learn about world conditions first-hand and the satisfaction of being of real service. Educational opportunities for English-speaking children, especially at the high-school level, are limited. Therefore, foreign assignments are not recommended for applicants who would find it necessary to take large families.

Contracts cover a 2-year period, and the salaries including allowances range from $6,600 to $12,000; the latter salary is that of the chief of party. Transportation is provided for the immediate family.

Security checks are made in all cases and take a minimum of 3 months to complete. Before going on a field assignment, each person goes through an orientation course of about 3 weeks.

Cooperative Research Intern Program in Agriculture

By R. Y. WINTERS*

THE Cooperative Research Intern Program of the United States Department of Agriculture and the land-grant colleges and universities is now in its third year. It is an effort to develop much needed research personnel with broad understanding of regional and national programs in agriculture.

Origin

In a discussion of "in-service" training of Department of Agriculture personnel, a member of a special committee of the Department Graduate School suggested in 1947 that the Department might contribute to the training of research personnel by offering advanced graduate students in the colleges and universities an opportunity to gain research experience under research scientists of the Department. The suggestion anticipated that such opportunities would be offered advanced graduate students who had completed all or most of their required course work and that consideration would be given to students recommended by the deans of their respective graduate schools. Graduate courses of the Department's Graduate School would also be available to supplement the university training. The research accomplished could be submitted for graduate credit, subject to the approval of the institution in which the student is registered. The appointment would be limited to 1 year and the student would be paid for services rendered.

The plan was recommended to the Board of Directors of the Department of Agriculture Graduate School. After careful consideration by the Board, the proposal was recommended to the Secretary of Agriculture, who approved the plan in principle and appointed a Department committee to give further consideration to the need and opportunities for establishing such a system. The committee of the Department made a favorable report and suggested that the matter be discussed with representatives of the Association of Land-Grant Colleges and Universities. At a conference in Washington, the proposal was discussed with the Executive Committee of the Association. After independent consideration, the Executive Committee approved the general objectives and asked that the Department committee work with a committee of the Graduate Council of the Association in further consideration of the opportunities for cooperation. The recommendation of the special committee follows:

"It is the judgment of the special committee that the plan has merit and that member institutions might well encourage carefully selected students to take advantage of the opportunities thus proposed to be made available to them through the Department.

"Accordingly, the special committee recommends that the proposal be approved in principle . . . Such approval in principle, it should be emphasized, binds neither the Department nor the member institutions to any specific course of action; it merely signifies the mutual conviction that such cooperation would prove helpful to properly qualified students and would advance the cause of agricultural research. In each instance the Department and the member institutions would agree in advance with respect to all matters of detail involving particular research and particular students."

This is the basis of understanding approved by the Executive Committee of the Association of Land-Grant Colleges and Universities and the Secretary of Agriculture.

Authority for Appointments

A review of existing authority for making temporary appointments to accommodate the cooperative intern program indicated that additional authority would be required. The Department's Office of Personnel collaborated with the Civil Service Commission in the preparation of a statement of conditions for appointment and tenure, which was later approved by the Commission. Authority to appoint faculty members as well as graduate students was included in the regulation. University faculty members have, from time to time, requested opportunities to pursue certain research problems in the laboratories of the Department where specialized staff and equipment are available. Some have sought to spend a part of their sabbatical or other leave at

*Chairman, Committee on Internship Cooperation of the United States Department of Agriculture Graduate School.

one of the laboratories to gain research experience or to advance their technical skills. Authority to make temporary appointments of such persons was also included in the regulations governing the intern program issued by the Civil Service Commission. The authority, contained in section 6.111 (a) (10) and (9) of schedule A of the Civil Service Rules and Regulations, is as follows:

"(10) NC/PD. Professional and subprofessional positions in the field of research when filled by graduate students at accredited colleges or universities: *Provided*, That such research work is to be used by the student as a basis for securing certain academic credit toward a graduate degree. The total employment in any one case shall not exceed 1 year unless extended by the Commission and such employment may be continued under this provision only so long as these conditions are met. The total number of positions to be filled under this provision may not exceed 100 at any one time."

"(9) NC/PD. Scientific and professional positions when filled by bona fide members of the faculty of an accredited college or university not to exceed 120 days in the period of 1 year in any individual case and the total number of appointments not to exceed 25 at any one time."

Administration

The planning and development of this program was the result of joint efforts of the land-grant colleges and representatives of the Department of Agriculture research agencies and the U. S. D. A. Graduate School. When the original planning and introduction of the program had been completed, this committee was succeeded by a Committee on Internship Cooperation of the U. S. D. A. Graduate School. The new committee serves in an advisory capacity to coordinate the work and study activities of the interns; to recommend to the Office of Personnel of the Department ways and means of facilitating and improving the program and to assist in maintaining the continued interest of the participating agencies.

In the Department the program is administered by the Office of Personnel. During the early fall this office makes a canvass of each of the bureaus and agencies of the Department to determine the number of intern opportunities available and the training required. Special forms have been prepared to record a description of the field of research where opportunities exist, the desirable qualifications of the student, compensation, duties, and place of employment. This information is supplied by the agency having intern opportunities and is submitted to the Office of Personnel. When all of the records of requirements are in, the information is sent to the deans of graduate schools in land-grant institutions and to other appropriate institutions offering graduate work in subjects pertinent to agriculture.

Selection of Interns

A record of a few specifications for intern candidates will help to indicate the procedure for selecting the interns:

Agency: *Bureau of Human Nutrition and Home Economics:* (1) Description of field of research—Physiological and biochemical research in connection with vitamin A utilization. (2) Desirable qualifications—Bachelor's degree with a major in chemistry and the equivalent of a minor in biology. Completion of course work for the master's or doctor's degree in biochemistry; knowledge of the fundamentals of vitamin A and carotenoid pigments and 1 year or more of experience with the analytical techniques for their measurement.

Agency: *Bureau of Agricultural Economics:* (1) Description of field of research—Agricultural finance. (2) Desirable qualifications—The student should have advanced graduate work approximately equivalent to completion of course for doctorate, including courses in money and banking.

Agency: *Bureau of Agricultural and Industrial Chemistry:* (1) Description of field of research—The field of research will be microbiology involving the study of natural relationship, variability, and genetics of micro-organisms as these relate to fermentation processes in the utilization of agricultural commodities. (2) Desirable qualifications (instructor)—The qualifications which instructors should possess are acknowledged expertness in specific fields of research, doctor of philosophy degree in bacteriology, microbiology, mycology, or genetics.

Recommendations of faculty members or graduate students are made by the deans of their graduate schools to the Office of Personnel in the Department. The information on each candidate is supplied the agency offering the opportunity. The candidate is considered by the agency project leader and if his decision is favorable, negotiations are started through the dean of the graduate school. Plans for the specific research problem are made through collaboration with the student's committee or adviser, the

project leader of the Department, and the student. The plans are approved by the graduate dean and the chief of the Department agency concerned. The student's committee or adviser is encouraged to follow the progress of the student's research. The institution in which the graduate student is registered determines the acceptability of the research and supplementary courses for graduate credit.

The cooperative intern program is young. It was started at a time when war conditions had materially reduced the number of graduate students and the demand for their services was strong. The program is not a recruiting program for regular personnel of the Department, but one of cooperation to accelerate the development of much-needed technical and research personnel. Interns who have successfully completed work under the temporary appointment may enter the regular service only through the usual civil service examination. We believe the year's experience in the Department will give the students a better understanding of the Department's organization and objectives and will aid in the development of men and women who may cooperate in regional and national programs with better understanding.

Statistics of the cooperative intern program 1949 to 1951

Year	Number of Bureaus participating	Number of internship openings	Number of sponsoring colleges	Number of nominations	Number of appointments
1949–50	6	28	13	13	7
1950–51	5	29	12	14	5
1951–52	6	58	43	69	(1)

[1] Appointments have been delayed or abandoned due to uncertainty of budgets

The program has been limited by the number of qualified candidates and by the late determination each year of the Department's available funds. The Department agencies that have participated in the program express continuing interest and appreciation of the opportunities. The past performance is summarized in the accompanying table.

Those who have been most interested and active in the promotion of the intern program hope that separate appropriations may be made available for this purpose so that early selection of candidates may be made with greater assurance. At present, support of the program comes from funds appropriated to agencies for specific purposes in the Department's general program, and disbursements are made on the basis of contributions to those purposes.

NEW PUBLICATIONS

Government Publications

How To Obtain

(1) *Cost Publications: Send request, enclosing remittance (check or money order), to the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.*

(2) *Free Publications: Request direct from the agency issuing them.*

From the Office of Education

Expenditures Per Pupil in City School Systems, 1949–50, by Lester B. Herlihy. Washington, D. C., U. S. Government Printing Office, 1951. Circular No. 292. 48 p. Proc. 25 cents.

Health Instruction in the Secondary Schools: An Inquiry Into Its Organization and Administration, by H. F. Kilander. Washington, D. C., U. S. Government Printing Office, 1951. Pamphlet No. 110. 20 p. 10 cents.

Identifying Educational Needs of Adults, by Homer Kempfer. Washington, D. C., U. S. Government Printing Office, 1951. Circular No. 330. 64 p. Proc. 35 cents.

Improving School Holding Power: Some Research Proposals. Washington, D. C., U. S. Government Printing Office, 1951. Circular No. 291. 86 p. Proc. 40 cents. (Work Conference on Life Adjustment Education, Chicago, Ill., Feb. 5–7, 1951. Report of Representatives of School Systems in Cities of More Than 200,000 Population.)

Offerings and Enrollments in High-School Subjects. Washington, D. C., U. S. Government Printing Office, 1951. Biennial Survey of Education in the United States, 1948–50, Chapter 5. 118 p. 30 cents.

Pupil Personnel Services in Elementary and Secondary Schools: Report of a Conference Called by the Office of Education, Federal Security Agency. Washington, D. C., U. S. Government Printing Office, 1951. Circular No. 325. 14 p. Proc. 15 cents.

Report of National Conference of Supervisors of

Home Economics Education, Berenice Mallory and Mary Laxson (*comp.*). Washington, D. C., 1951. Misc. 3399. 68 p. Proc. Free.

School Lunch and Nutrition Education: Some Questions and Answers. Washington, D. C., U. S. Government Printing Office, 1951. Bulletin 1951, No. 14. 12 p. 10 cents.

Statistics of Land-Grant Colleges and Universities, Year Ended June 30, 1950, by Maude Farr and Robert C. Story. Washington, D. C., U. S. Government Printing Office, 1951. Bulletin 1951, No. 4. 48 p. 15 cents.

U. S. Government Films for Television, by Seerley Reid. Washington, D. C., July 1951. 51 p. Proc. Free.

Vitalizing Secondary Education: Report of the First Commission on Life Adjustment Education for Youth. Washington, D. C., U. S. Government Printing Office, 1951. Bulletin 1951, No. 3. 106 p. 30 cents.

From Other Government Agencies

Department of Labor and Veterans' Administration. *Occupational Outlook Handbook:* Employment Information on Major Occupations for Use in Guidance. Washington, D. C., U. S. Government Printing Office, 1951. Bulletin No. 998, Revision of Bulletin 940. 576 p. Paper, $3.

Department of State. *United States Government International Exchange Opportunities.* Washington, D. C., U. S. Government Printing Office, 1951. Department of State Publication 4198. 24 p. Paper, 10 cents.

Federal Security Agency, Public Health Service. *The United States Cadet Nurse Corps and Other Federal Nurse Training Programs.* Washington, D. C., U. S. Government Printing Office, 1950. PHS Publication No. 38. 100 p. $1.

Non-Government Publications

Addresses Given at the Annual Conference on Higher Education in Michigan, Nov. 29 and 30, 1950. Ann Arbor, Mich., University of Michigan, Official Publication Vol. 52, No. 100, June 14, 1951. 36 p.

Addresses on: The Market for College Graduates; Vocations for College Men and Their Education; Two Universal Values in a Broad Education; and Goals for the Future.

The Bureau of Educational Research: The Work It Does; The People It Serves. Columbus, Ohio, the Ohio State University, College of Education, 1951. 16 p. Free from the bureau.

A pictorial report intended to describe the services of the Bureau of Educational Research to the schools of Ohio, the university, and the Nation and the world.

Creative Education in the Humanities, by Arnold Didier Graeffe. New York, Harper & Bros., 1951. 199 p. $3.

Deals with the rising number of general courses in the humanities and answers the question whether the arts should be taught together. The six chapters are: Can the Arts Be Taught Together; the Humanities Area; Integration as Method; Stages of Integration; Techniques of Integration; and Some Specific Plans.

English at Georgetown, by Richard A. Gordon, William P. Blatty, and Alan P. Jarvis, *ed.* Washington, D. C., the Georgetown University Book Store, 1951. 92 p. Proc. Paper, $0.60.

In three parts—I, an evaluation of the English curriculum at Georgetown University by present and former students, with particular reference to the "context question"—"the method of testing whereby the student is required to relate a brief passage to its context"; II, a detailed description of the English courses at Georgetown University; and III, bibliographies for the English elective courses.

HIGHER EDUCATION

Published semimonthly from September through May, by the Office of Education. Its printing is approved by the Bureau of the Budget as required by Rule 42 of the Joint Committee on Printing. Prepared in the Division of Higher Education.

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Publication Office: Office of Education FEDERAL SECURITY AGENCY, WASHINGTON 25, D. C.

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U. S. GOVERNMENT PRINTING OFFICE: 1951